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ABSTRACT

This report, an expansion on "The Interim Report: Research of the New Nursery School," is presented in three sections. The first section examines the test results of 29 children enrolled in the New Nursery School (NNS, for academically handicapped, low income Mexican-Americans) and the REN school (similar to the NNS but for children whose parents can afford tuition). The tests included the Peabody, the Caldwell, the "C" Test, and the Categories Test. Though the tests have a very limited value for evaluating the effectiveness of the program at this time, the results seem to indicate the NNS is affecting children's behavior in a desired direction. Section two, a follow-up study of children who previously attended the schools, used standard tests, such as the Stanford-Binet, and teacher ratings. The tests tend to show that old NNS students are performing at least satisfactorily in their grade. The teacher ratings, however, correlate poorly with more objective measures and lead to the unfortunate conclusion that teachers are still prejudging children as poor-learning stereotypes. The final section reports on the usefulness of the "typing booth," a facility at the NNS. (MH)

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A SUPPLEMENTARY REPORT ON EVALUATION OF THE NEW NURSERY SCHOOL PROGRAM AT COLORADO STATE COLLEGE

By

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INTRODUCTION

This report is not intended to stand alone. It expands upon The Interim Report: Research of the New Nursery School (Nimnicht, Meier, McAfee, Colorado State College, 1967) and the reader should refer to that report for a more complete explanation of the tests used in the study, and for other background information.

This report is presented in three sections. In the first section, we report on the test results of the children who were enrolled in the New Nursery School and the REN school during the 1967-68 school year. In the second section we report on the follow-up study of children who had previously attended the schools and in the third section we report on the evaluation of the typing booths.

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BACKGROUND DATA

Twenty-nine 3- and 4-year-old deprived children, representing 28 families are included in the 1967-68 study.

Composition of Home:

Both Parents Present in Home	Father Only in Home	Mother Only in Home	Foster Home	TOTAL
19*	1#	6+	2&	28

* In two cases, fathers are present only occasionally

\# A step-mother is present

\+ In one instance, grandparents are present

& Both natural parents in one case are in prison

The 29 children in this study have a total of 131 siblings, or an average of 4.5 sibs.* Six brothers and sisters of one child are in foster homes; the whereabouts of two brothers and sisters of another child is unknown.

Language Background of the Home:

Bilingual Home	Spanish Only	English Only	No Information
15**	4	8	1

Educational Level of Intact Homes

	Number of years in school	
	Fathers	Mothers
Mean	6.6	6.5
Range	0 - 12	0 - 10

The educational level of the total home ranges from No formal education for either father or mother in one case, to 12 years for the father and eight years for the mother, in another.

* In 1966 only 11 percent of U.S. families had four or more children.

** In seven of these homes, Spanish is the primary language.

Occupational Level of Intact Homes:

Source of Income				
Welfare (Entire) including ADC	Part-time or Seasonal work supplemented by Welfare	Self-supporting (Entire)	Unknown	TOTAL
5	5	17	1	28

Of the 22 families who are entirely or partly self-supporting, the mother works outside the home in four families. Occupations of both father and mother (when employed) is generally at the lowest level of skill. Of the 17 families who are wholly self-supporting, the father is employed in a year-round or regular job in only five cases; in the other 12 families the father apparently must try to earn from his seasonal or temporary employment enough income to support his family through periods of unemployment.

SECTION I 1967-68 TEST RESULTS

1. Peabody Picture Vocabulary Test

The PPVT was administered to the NNS and REN* children in the Fall, 1967 and again in the Spring, 1968. Results appear in Table I, and represent only those children who were able to be tested on both occasions. As we had anticipated, the NNS children as a whole, and in the four age-grade groups, scored lower than did the REN children. While there was some slight increase in two of the NNS groups from pre- to posttest, there was no significant change for these children as a whole.**

Results are generally consistent with results from previous years; the reader is referred to Tables I and III of the original report. While earlier classes showed some increase from pre- to posttest, their initial scores were somewhat lower than those obtained this year. Particular note should be made however, of the increase in test scores for 4-2 children. Eight of this year's group were included as three-year-olds in the 1966-67 PPVT pre-posttest comparison shown in Table I of the first report. At the Spring testing that year they had a mean score of 84.88, while in the following Fall their mean was 95.13, significant beyond .025. On the whole, we feel that the NNS graduates of 1967-68 are entering the Greeley public schools with a potenital for success that is equal to the potential of earlier NNS graduates.

* A nursery school for children whose parents can afford to pay tuition. The school uses the same procedure and has the same objectives as the New Nursery School.

** The test of significant used throughout the 1967-68 study is one described by Penfield and MacSweeny, in American Psychologist, 1968.

TABLE I

NNS AND REN PPVT PRE- AND POSTTEST MEAN SCORES, 1967-68

NNS

	N	Pre Test Mean	S.D.	Post Test Mean	S	p<
(All)	21	90.90	14.25	90.81	14.25	NS
3-1	7	86.00	12.16	85.71	7.97	NS
3-2	2	82.00	22.63	88.50	31.82	*
4-1	1	109.00	-	68.00	-	*
4-2	11	94.18	12.65	96.55	9.90	NS

REN

N	Pre Test Mean	S.D.	Post Test Mean	S	p<
24	113.96	11.09	116.08	7.48	NS
3	110.66	13.01	123.30	2.88	*
2	113.50	19.09	114.50	4.94	*
10	113.80	10.69	114.40	10.22	*
9	115.33	12.17	115.88	4.73	NS

*N's too small for statistical comparison

2. Caldwell Pre-School Inventory

A comparison of the NNS and REN PSI scores in Table II indicates a significant advantage in favor of the REN children. In a recent Berkeley, California study, we found the correlation between the PSI and a standard intelligence test to be .65; since the REN PPVT scores were higher, it was not unexpected to find their PSI scores high as well. What we do find, however, is a consistent increase in scores for the NNS four-year-olds who are in school for the second year, and this does not hold for the REN children.

The norms which are available for this test are somewhat less than adequate at the present time. Nevertheless, the reader should have a frame of reference and, therefore we have listed in cells of Table II percentiles for middle class children at which a raw score of the magnitude of that mean would fall. We used middle class percentile conversions because we feel these children will be competing in a middle class school mileu. The middle class norms for the test scores do not do justice to the effectiveness of our program. In order to know how well our children are doing in comparison to another group of disadvantaged children, we present below the lower class percentile conversions for these same NNS raw scores:

	Factor A	Factor B	Factor C_1	Factor C_2	TOTAL
NNS 3-1	50th	70th	70th	90th	80th
3-2	50th	70th	65th	90th	80th
4-1	10th	30th	40th	35th	15th
4-2	65th	70th	60th	70th	60th

It is apparent from these percentiles that the majority of our children are scoring above the median.

TABLE II

NNS AND REN PRE-SCHOOL INVENTORY SCORES, 1967-68

	FACTOR A			FACTOR B			FACTOR C_1			FACTOR C_2			TOTAL		
	NNS (26)	REN (33)		NNS (26)	REN (33)		NNS (26)	REN (33)		NNS (25)	REN (33)		NNS (25)	REN (33)	
ALL	15.14 4.96	22.70 1.61	.001	7.65 4.53	18.36 3.52	.001	8.46 2.37	14.39 2.45	.001	13.21 2.99	17.42 1.94	.001	44.84 12.56	73.09 6.98	.001
3-1	13.20 (20) (10) 3.82	21.60 (75) (5) 1.67	.001	5.00 (10) (10) 3.06	17.60 (95) (5) 4.72	.001	7.70 (40) (10) 2.00	11.00 (75) (5) 2.92	.05	11.89 (35) (9) 2.71	15.60 (90) (5) 3.85	.001	38.89 (25) (9) 7.87	65.80 (95) (5) 9.42	.001
3-2	13.00 (20) (1) --	22.50 (85) (2) 2.12	*	5.00 (10) (1) --	15.50 (95) (2) 7.78	*	6.00 (30) (1) --	15.00 (95) (2) 2.83	*	12.00 (50) (1) --	16.50 (95) (2) 2.12	*	36.00 (20) (1) --	69.50 (95) (2) 10.61	*
4-1	7.00 (0) (2) 2.83	23.40 (80) (16) 1.17	*	6.00 (0) (2) 2.83	18.00 (75) (16) 2.94	*	6.00 (0) (2) --	15.13 (90) (16) 1.82	*	9.00 (0) (2) 1.41	18.00 (95) (16) 1.15	*	28.00 (0) (2) 7.07	74.19 (90) (16) 5.19	*
4-2	18.15 (15) (13) 4.14	22.63 (65) (10) 1.71	.001	10.15 (5) (13) 4.62	19.90 (95) (10) 2.81	.001	9.62 (5) (13) 2.29	14.80 (85) (10) 1.87	.001	15.08 (30) (13) 2.14	17.60 (70) (10) 1.17	NS	52.23 (5) (13) 11.43	75.70 (95) (10) 5.85	.001

*NS too small for comparison

NOTE: The first figure in parenthesis in each cell is the middle class percentile conversion for the average score of that cell. No percentile conversion is made for the total group mean because 2 age groups are included. The second parenthetical number represents the N for that cell.

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In 1966-67, the norms we used for the PSI were Caldwell's own; it is necessary to convert last year's raw scores to the Educational Testing Service norms we are using this year. Therefore, Table VII in the original report cannot be used for comparative purposes, instead we are supplying Table III here with the lower class norms shown for both years. While on the whole, this year's children did not perform as well on the test as our group of last year, we do note the same increase in score for the children in school for the second year.

3. "C" Test

The "C" Test was administered three times: early Fall, mid-year, and late Spring. Test results are presented in Tables IV. While it is true that the REN children scored significantly higher than the NNS children on all three occasions, the NNS children made appreciable gains throughout the year. The mid-year mean for them is significantly ($p < .001$) higher than the Fall mean, and a few of the children continued to make small gains in the Spring testing.

If the reader will compare the mean Spring scores with the scores for 1966-67 shown in Table XI of the first report, the similarity for the two years is clear. There is a tendency for mean scores to increase with age, and with the second year's exposure to the school; this is true for the REN as well as the NNS school. One additional point should be noted: 11 4-2 children of this year were included as three-year-olds in the previous report. As three-year-olds, their mean score on the "C" test was 1.27, yet the following Fall their mean was 3.54, significant beyond .001.

TABLE III

NNS MEAN AND PERCENTILE PRESCHOOL INVENTORY SCORES FOR 1966-67 AND 1967-68

GROUP	N	FACTOR A		FACTOR B		FACTOR C_1		FACTOR C_2		TOTAL	
		SCORE	%	SCORE	%	SCORE	%	SCORE	%	SCORE	%
1966-67:											
NNS 3	25	14.52	35	7.36	15	7.56	40	11.64	35	41.08	30
NNS 4-1	14	16.07	5	9.93	0	10.50	10	14.50	15	51.00	0
NNS 4-2	7	19.00	25	15.28	45	12.28	45	16.85	50	63.42	35
1967-68:											
NNS 3-1	10	13.20	20	5.00	10	7.70	40	11.89	35	38.89	25
NNS 3-2	1	13.00	20	5.00	10	6.00	30	12.00	50	36.00	20
NNS 4-1	2	7.00	0	6.00	0	6.00	0	9.00	0	28.00	0
NNS 4-2	13	18.15	15	10.15	5	9.62	5	15.08	30	53.00	5

TABLE IV

NNS AND REN MEAN "C" TEST SCORES ON 3 OCCASIONS, 1967-68

NNS

	Fall			Mid-Year		Spring	
	N	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
(All)	24	1.91	2.34	3.95	2.46	3.96	2.50
3-1	9	.50	.92	4.00	2.40	2.87	2.10
3-2	2	1.00	0	2.50	.70	3.50	.70
4-1	2	0	0	3.00	2.82	4.00	2.82
4-2	11	3.54	2.54	4.36	2.76	4.54	2.80

REN

	Fall			Mid-Year		Spring	
	N	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
(All)	25	3.32	3.16	6.00	2.77	5.32	2.78
3-1	4	2.00	1.82	5.25	2.50	3.75	2.36
3-2	2	2.50	3.53	9.00	0	8.00	1.41
4-1	10	3.11	2.26	5.10	2.51	4.90	2.76
4-2	9	4.33	2.12	6.66	3.24	5.88	2.47

4. Color Test

The Color Test, like the "C" test, was administered three times; results appear in Table V. While the REN children started higher and continued to score significantly higher than the NNS children, the NNS showed a significant increase throughout the year, while the REN group did not. All four age-grade groups increased in test score as the year went on, and some children (particularly in the 4-2 group) were scoring at test ceiling. Reference to Table V in the earlier report shows similar changes took place last year and the greatest gains are made by children in school for the first year, irrespective of age.

5. Categories Test

The Categories Test was administered in the Fall and again in the Spring; results are shown in Table VI. Although the two groups as a whole differed significantly on the two occasions, the NNS children did make some small, though insignificant, gains throughout the year.

This test was administered only once in the previous school year; a comparison of different scores for the two years is not possible. However, if we compare our posttest scores of this year with the scores for 1966-67 in Table XVI of the original report, some similarity is evident. There is a tendency for older children to score higher, and it seems that if we expose a child to two years in school it does not increase his score on this test.

6. Cincinnatti Autonomy Test Battery

Three of the original subtests were administered this year:

A. Impulse Control

B. Innovative Behavior, and

C. Field Independence;

TABLE V

NNS AND REN MEAN PRE- AND POSTTEST SCORES ON THE COLOR TEST, 1967-68

NNS

		Fall		Mid-Year		Spring	
	N	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
(All)	24	3.00	2.19	4.66	2.87	6.71	4.20
3-1	9	.77	1.71	3.00	2.30	6.22	2.68
3-2	2	2.00	1.41	4.50	2.12	6.00	0
4-1	2	0	0	2.50	0.50	5.00	1.41
4-2	11	5.54	3.20	6.55	2.70	7.54	2.01

REN

		Fall		Mid-Year		Spring	
	N	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
(All)	25	7.68	1.65	8.40	2.44	8.60	1.12
3-1	4	6.00	2.94	6.50	3.70	7.25	2.36
3-2	2	8.50	0.70	9.00	0	9.00	0
4-1	10	7.77	1.20	8.80	0.41	9.00	0
4-2	9	8.22	1.20	8.67	0.50	8.88	0.33

TABLE VI

NNS AND REN MEAN PRE AND POSTTEST SCORES
ON THE CATEGORIES TEST, 1967-68

NNS

	Fall			Spring	
	N	$\bar{X}$	S	$\bar{X}$	S
(all)	23	24.00	5.41	25.13	9.43
3-1	7	20.42	4.35	22.42	6.24
3-2	2	21.50	4.94	20.00	5.65
4-1	2	27.50	6.36	26.50	0.70
4-2	12	25.91	5.17	27.33	10.45

REN

	Fall			Spring	
	N	$\bar{X}$	S	$\bar{X}$	S
(all)	25	31.24	7.50	38.64	9.94
3-1	4	24.00	5.47	35.50	10.34
3-2	2	29.50	0.70	29.50	4.94
4-1	10	33.30	6.60	40.90	9.98
4-2	9	32.55	10.18	39.55	13.43

results are shown in Table VII.* These subtests were selected because each appears to be measuring a separate function; the intercorrelations are:

	Innovative Behavior	Field Independence
Impulse Control	-.32	-.22
Innovative Behavior		-.39

Impulse Control: NNS children as a whole showed significantly less control than REN children; however, there is a tendency towards greater control with a second year's exposure to school.

Innovative Behavior: NNS children scored significantly lower than REN children. The function measured here also appears to be affected by exposure to school: there is a tendency for the NNS children to score lower in the second year than in the first, although the N's are too small to make a meaningful comparison; however, scores increase with age for both groups.

Field Independence: The significant difference we noted for the two tests above continues to hold here; scores increase with age for both groups, and for the three-year-olds, at least, to increase with exposure to school.

Reference to Table X in the original report indicates that scores this year are in the same area with previous test results. While the scores in Column 2 for Impulse Control were slightly lower last year (more control) the difference is not significant. The scores for four-year-olds cannot be compared with last year's

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* High Impulse Control scores indicate less control than low scores do.

TABLE VII

NNS AND REN MEAN CATB SCORES, 1967-68

IMPULSE CONTROL SUBTEST				
	NNS (26)		REN (36)	
Mean	1.267		.580	
S.D.	.868		.593	
Mean	1.184	(10)	1.006	(7)
S.D.	.667		1.061	
Mean	.875	(2)	1.125	(2)
S.D.	.092		.573	
Mean	2.225	(2)	.425	(16)
S.D.	.728		.339	
Mean	1.242	(12)	.444	(11)
S.D.	1.049		.259	
INNOVATIVE BEHAVIOR SUBTEST				
	NNS (27)		REN (37)	
Mean	6.33		8.84	
S.D.	3.93		5.13	
Mean	4.90	(10)	6.71	(7)
S.D.	2.77		4.19	
Mean	4.00	(2)	7.50	(2)
S.D.	1.41		2.12	
Mean	9.50	(2)	8.69	(16)
S.D.	3.54		5.06	
Mean	7.31	(13)	10.50	(12)
S.D.	4.61		5.93	
FIELD INDEPENDENCE SUBTEST				
	NNS (27)		REN (38)	
Mean	7.11		9.90	
S.D.	2.50		3.20	
Mean	5.30	(10)	6.63	(8)
S.D.	1.95		3.58	
Mean	6.50	(2)	8.50	(2)
S.D.	.71		.71	
Mean	10.00	(2)	11.25	(16)
S.D.	2.83		2.11	
Mean	8.15	(13)	10.50	(12)
S.D.	2.15		2.84	

three-year-old results; only five children appear in both groups; four of these show a small decrease in control, and one small increase.

Innovative Behavior scores are higher for this year than for last (Table X, Column 4). The four-year-olds increased significantly over their first year results.

Scores on Field Independence were also significantly higher this year, and of the seven four-year-olds who tested for the first time last year as three-year-olds, five increased in score, one remained the same, and one decreased.

7. Behavior Rating Scale

BRS is a 10-item teacher rating of a child's self-esteen behaviors, developed by Stanley Coopersmith of the University of California, Davis (1968). Each item is a five-point scale from never to always; range of scores for the total test is 0-50.

In Table VIII we show mean scores for 1967-68 NNS and REN children. While the NNS children were rated as less frequently displaying the behaviors considered desirable on this scale, there was a tendency for the mean scores to increase with increasing exposure to the school.

8. Intercorrelations

Table IX shows the inter-correlations between test scores for 1967-68; the same information for 1966-67 is shown in Table X.

The results from both years indicate that there is considerable overlap in what the PPVT and the PSI is measuring.

The "C" Test correlated better with the PPVT and the PSI in 1966-67 than in 1967-68 but there still appears to be considerable overlap between it and the PSI. There appears to be a significant pattern of correlations between the Categories Test and the other

TABLE VIII

NNS and REN MEAN BEHAVIOR RATING SCALE SCORES, 1967-68

	NNS			REN			P<
	N	$\bar{X}$	S	N	$\bar{X}$	S	
(All)	28	32.50	4.79	35	37.31	5.21	.001
3-1	11	31.91	5.75	7	34.71	4.23	.025
3-2	2	33.00	8.49	2	38.00	0	*
4-1	2	32.50	2.12	17	37.94	5.53	*
4-2	13	32.92	4.13	9	38.00	5.79	.01

*Ns too small for statistical comparison

TABLE IX

TABLE OF INTERCORRELATION COEFFICIENTS, NNS AND REN CHILDREN, 1967-68

	PSI								CATB			
	FACTOR A	FACTOR B	FACTOR C_1	FACTOR C_2	TOTAL	"C" TEST	COLOR TEST	CATE-GORIES TEST	IMPULSE CONTROL	INNOVA-TIVE BE-HAVIOR	FIELD INDE-PENDENCE	BEHAVIOR RATING SCALE
PPVT (Post)	.58	.54	.48	.52	.58	.20	.40	.38	-.58	.21	.28	.22
PSI A		.84	.78	.72	.93	.36	.71	.39	-.62	.29	.43	.29
B			.81	.63	.84	.39	.61	.39	-.61	.31	.47	.29
C_1				.82	.92	.43	.62	.47	-.55	.14	.52	.20
C_2					.82	.52	.71	.43	-.56	.22	.50	.16
TOTAL						.37	.72	.45	-.65	.30	.52	.33
"C" TEST							.20	.32	-.08	.32	.21	.03
COLOR TEST								.50	-.42	.20	.43	.33
CATEGORIES TEST									-.23	.23	.43	.03
CATB -Impulse Control										-.32	-.22	-.09
Innovative Behavior											.39	.25
Field Independence												.19

TABLE X

TABLE OF INTERCORRELATION COEFFICIENTS, NNS AND REN CHILDREN, 1966-67

		P.S.I.							C.A.T.B.		
		Factor A	Factor B	Factor C_1	Factor C_2	Total	"C" Test	Categories Test	Impulse Control	Innovative Behavior	Field Independence
PPVT		.41	.55	.41	.42	.55	.47	.25	.38	.30	.23
PSI	Factor A		.56	.40	.45	.77	.41	.29	.04	.45	.13
	Factor B			.40	.51	.80	.72	.37	.15	.41	.22
	Factor C_1				.54	.70	.40	.34	.35	.42	.48
	Factor C_2					.80	.37	.58	.10	.45	.44
	Total						.60	.56	.17	.53	.40
"C" Test								.27	-.26	.27	.14
Categories Test									-.17	.37	.37
CATB	Impulse Control									.03	.21
	Innovative Behavior										.23

measures for the two years. The results on the Impulse Control Test for the two years is in the same direction.* Innovative Behavior shows moderate but consistent correlations with other measures but either no correlation or negative correlation with Impulse Control, suggesting that a combination of Impulse Control and Innovative Behavior may prove useful. The same kind of observation is true of Field Independence.

The test of color recognition correlates with the PPVT, the PSI, Categories Test and Field Independence.

9. Discussion

The study of the correlations in Table IX raises several questions. It is obvious that there is considerable overlap in whatever the tests are measuring. For example, the data suggests that the test of color recognition, Impulse Control, the "C" Test and Innovative Behavior, might be used in combination and thus eliminate the need for the other tests. The intercorrelations for those tests are:

	"C"	I.C.	I.B
Color	.20	.08	.20
I.C.	.08	-32	-
I.B.	.32	-	-

The correlations with the PPVT are color .40; "C" Test .20; Impulse Control .58; Innovative Behaviors .21; and the correlations with the PSI are Color .72; "C" Test .37; Impulse Control .65; and Innovative Behavior .30.

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* The appearance of negative coefficients for this year is misleading. While there is an inverse relationship between lack of control (high scores) and success on other tests, giving us the negative correlations, this is the same relationship found last year. Positive correlations were found last year because we used a different method of computing the index of impulse control, and at that time high scores indicated more control than low scores.

TABLE XI

MEAN STANFORD-BINET SCORES AND STANDARD DEVIATION
FOR NNS GRADUATES NOW IN THE PUBLIC SCHOOLS IN GREELEY*

NOW IN:	NNS N	NNS MEAN	NNS S.D.	COMPARABLE N	COMPARABLE MEAN	COMPARABLE S.D.	DIFF.
2nd Grade	12	93.67	6.37	22	85.63	10.31	8.04
1st Grade	21	93.76	12.18	28	83.75	18.66	10.01
Kinder-garten	16	90.19	11.17	16	95.75	11.33	-5.56

*These scores were obtained on entrance to kindergarten.

The obvious problem we have at this time is the limited number of cases involved and the lack of a criterion measure. Since we have been experimenting with most of these tests for only two years, we cannot relate them to school success or other measures of intellectual development. But, over time we hope we will be able to determine the various uses of the different tests. The "C" Test and the Color Test have obvious face validity for measuring two of the objectives of the school. All four tests are relatively free of a language basis, and all of them are easy to administer in the classroom, and to score.

As far as evaluating the effectiveness of the program the tests have a very limited value at this time. If we can assume that the REN children are the most likely to be successful in school, and the more NNS children test like the REN children the more likely they are to be successful, then we are generally changing the NNS children's behavior in a desired direction. The children who have been in the school for two years score better than comparable four-year-old children who have been in the school for only one year. Furthermore, on two tests the children who had attended the NNS as three-year-olds scored significantly better in the Fall than they did the previous Spring (PPVT - Spring 84.88, Fall 96.13 and "C" Test Spring 1.27, Fall 3.54). This also reinforces the notion that two years of preschool is necessary to overcome the effects of severe environmental deprivation.

SECTION II FOLLOW UP

STANFORD-BINET SCORES

Table XI shows the mean IQ scores for the NNS and comparison groups who are now in kindergarten, 1st and 2nd grade. The tests were given to each group when they entered kindergarten. That fact that the NNS children in the 1st and 2nd grade have a higher mean IQ than the comparable group can probably be attributed to their pre-school experience. Otherwise, since they are a more deprived group of children, we would have predicted a low mean score.

The comparison children in kindergarten, in contrast to the comparison children in 1st and 2nd grade, were previously exposed to a one-year Head Start program in Greeley; their higher Binet score probably reflects this pre-school experience. Based upon these test results we would predict that NNS children in the 1st and 2nd grade would be achieving better than the comparable group, but that this relationship would not necessarily hold with the kindergarten groups.

TEACHER RATING OF SUCCESS ON NEW NURSERY SCHOOL OBJECTIVES

From an inspection of Table XII, it appears that there is little or no difference in the teacher's ratings of achievement between the NNS and comparable groups. The fact that the REN children are rated higher is not surprising since these children had IQ scores from 11 to 16 points above the mean of 100 while the mean NNS score was 93.

TEACHER RATINGS ON SIX RELEVANT VARIABLES

The distributions of rating for the three groups of children were compared by the Kolmogorov-Smirnov two sample tests. The results are reported in Table XIII. There is only one significant difference (on independence)

TABLE XII

MEAN TEACHER RATINGS OF PERCEPTUAL ACUITY, LANGUAGE DEVELOPMENT AND CONCEPT FORMATION FOR NNS, CONTROL & REN CHILDREN NOW IN PUBLIC SCHOOLS

	NNS	COMPARABLE	REN	SIGNIFICANCE*
Kindergarten	71.64 S = 8.33 N = 14	74.61 14.84 N = 18	84.64 11.30 N = 11	The difference between REN & NNS subjects is significant, $p < .001$. Control--NNS difference is not significant.
1st Grade	68.29 8.74 N = 14	70.75 11.58 N = 12	(Scores not available)	NS
2nd Grade	74.88 12.62 N = 8	71.44 10.62 N = 9	(Scores not available)	NS

* Test of significance is one described by Penfield & McSweeney (1968)

TABLE XIII

COMPARISON OF DISTRIBUTION OF TEACHER RATINGS ON SIX RELEVANT VARIABLES

	Reading Ability	Arith-metic Ability	Atten-tion Span	Good Behavior	Inde-pendence	Total School success
Kindergarten						
NNS (N=17)					.10	
CONTROL (N=19)						
REN (N=11)	.01	.05	.02	.10		.01
First Grade						
NNS (N=14)						
CONTROL (N=13)						
REN (N= 4)				.05	.10	
Second Grade						
NNS (N=9)						
CONTROL (N=9)						
REN	(There	are no	REN	Graduates	in 2nd	Grade)

between the NNS and comparable group and that could easily have occurred by chance. The REN group in kindergarten was rated higher than the NNS group on everything but independence. In the first grade, however, the REN group was significantly higher on only good behavior and independence.

TEACHER RATINGS ON SELF-IMAGE

As reported in Table XIV, there is no significant difference in the way teachers rate NNS and comparable children on self-image, but the REN group is rated higher on this variable.

SCORES ON THE METROPOLITAN READING READINESS TEST AND THE CALIFORNIA ACHIEVEMENT TEST

The scores on the Metropolitan for the three groups of children who were in kindergarten in 1966-67 and 1967-68 are reported in Table XV. The NNS group who were in kindergarten had a lower mean score than the group the previous year (73 compared to 79). However, since a mean score of 73 falls at the 66th percentile, these children seem to be well equipped to do 1st grade work. The higher percentile rank for the comparison children in 1967 than in 1966 can be explained by the Head Start program. The 1967 children were exposed to the pre-school experience, but the 1966 children were not.

The California Achievement Test scores presented in Table XVI are derived scores obtained by placing the raw scores for each child on a separate profile sheet. The derived score represents a grade placement; the mean score in each cell is thus the average grade placement for the total group in each area. Inspection of Table XVI indicates NNS children are scoring, on the whole at 1st grade, above their grade level, while the comparison children are scoring at, or slightly below, grade level. The scores for the group in the 2nd grade this year reflect our experience previously; unless some continuing program is established with deprived children, the

TABLE XIV

MEAN TEACHER RATINGS OF SELF-IMAGE FOR NNS, CONTROL & REN CHILDREN NOW IN PUBLIC SCHOOLS.

	NNS	CONTROL	REN	SIGNIFICANCE
Kindergarten	$\overline{X}$ = 31.57 S = 7.33 N = 14	35.17 8.13 18	39.64 5.60 11	The difference between the REN & NNS subjects is significant, $p < .001$. Control--NNS difference is not significant.
1st Grade	$\overline{X}$ = 34.57 S = 5.26 N = 14	32.54 6.38 13	(Scores not available)	NS
2nd Grade	$\overline{X}$ = 34.75 S = 7.02 N = 8	30.11 6.66 9	(Scores not available)	NS

TABLE XV

MEAN SCORES ON THE METROPOLITAN READING READINESS TESTS

FOR NNS GRADUATES, THEIR CONTROLS, AND REN GRADUATES NOW IN KINDERGARTEN

	READING READINESS			NUMBER READINESS			REPRODUCTION * OF FIGURES			TOTAL		
	NNS	CONTROL	REN	NNS	CONTROL	REN	NNS	CONTROL	REN	NNS	CONTROL	REN
1967-68	N = 13	15	7	N = 13	15	7	N=13	15	7	N=13	15	7
	$\overline{X}$=53.38	57.53	60.14	$\overline{X}$=17.84	17.73	22.30	$\overline{X}$=3.46	5.07	7.86	$\overline{X}$=73.00 66%	80.13 82%	90.28 97%
1966-67	N=16	28	$	N = 16	28	$				N=16	28	$
	$\overline{X}$=55.31	46.57		$\overline{X}$17.00	12.89					$\overline{X}$=78.87 78%	64.43 45%	

* The score on this subtest was not calculated for 1966-67 children.

$ Scores for REN children for 1966-67 are not available.

TABLE XVI

MEAN GRADE LEVEL SCORES ON THE CLAIFORNIA ACHIEVEMENT TESTS
FOR NNS GRADUATES, THEIR CONTROLS & REN GRADUATES NOW IN 1ST & 2ND GRADES

First Grade

Reading Vocabulary			Reading Comprehension			Arithmetic Reasoning		
NNS	CONTROL	REN	NNS	CONTROL	REN	NNS	CONTROL	REN
N=7	10	3	N=7	10	3	N=7	10	3
$\overline{X}$=2.17	1.66	3.07	$\overline{X}$=2.00	1.49	2.00	$\overline{X}$=1.87	1.82	2.37
Arithmetic Fundamentals			**English**			**Spelling**		
NNS	CONTROL	REN	NNS	CONTROL	REN	NNS	CONTROL	REN
N=7	10	3	N=7	10	3	N=7	10	3
$\overline{X}$=2.20	1.82	2.00	$\overline{X}$=2.13	1.85	2.13	$\overline{X}$=2.08	1.70	2.80

Second Grade

Reading Vocabulary			Reading Comprehension			Arithmetic Reasoning		
NNS	CONTROL	REN	NNS	CONTROL	REN	NNS	CONTROL	REN
N=7	N=6	None	N=7	N=6	None	N=7	N=6	None
$\overline{X}$=2.14	2.61		$\overline{X}$=2.26	2.66		$\overline{X}$=2.20	2.43	
Arithmetic Fundamentals			**English**			**Spelling**		
NNS	CONTROL	REN	NNS	CONTROL	REN	NNS	CONTROL	REN
N=7	N=6	None	N=7	N=6	None	N=7	N=6	None
$\overline{X}$=2.70	2.50		$\overline{X}$=2.30	2.31		$\overline{X}$=2.40	2.55	

effects of early special experience tend to wash out. Our children in the 2nd grade are scoring at, or slightly below grade level (tests were administered in May; grade level would be 2.7-2.9). Scores for the comparison children are in the same general area at 2nd grade, but lower in 1st grade.

SCHOOL ATTENDANCE

An interesting, and perhaps very significant, finding is that the NNS children have a better record of school attendance than the comparable group. 70% have been absent less than ten days while 56% of the comparable group and 66% of the REN children have had fewer than 10 days of absences (see Table XVII for the breakdown of attendance).

DISCUSSION

We feel the higher school attendance rate for the NNS graduates in the lower primary grades may be predictive of increased interest in school, both by the children and by their parents. Since minority group children more often see less meaning in school for themselves, more often drop out of school, and at an earlier age, than do more advantaged children, evidence of increased interest indicates we may be attacking a very critical problem and with the right age group.

Results from the Metropolitan and CAT tests indicate our children are performing at least at a satisfactory level in their grade; some children are doing much better; all have a reasonable expectation of being successful in school. Examination of the individual derived scores on the CAT shows that no NNS graduate now in 1st grade scored below a grade level of 1.4, (3 to 5 months behind grade level) and one child was scoring at a high 3rd grade level.

It is difficult to draw any conclusions from the teacher ratings. For

TABLE XVII

PERCENTAGE OF ABSENCES FOR NNS GRADUATES, THEIR CONTROLS, & REN CHILDREN NOW IN KINDERGARTEN, FIRST & SECOND GRADE IN GREELEY PUBLIC SCHOOLS.

	NNS	CONTROL	REN
Less than 10 days	.70	.56	.66
10-25 days	.19	.31	.33
25-50 days	.08	.09	
50+ days	.04	.03	

example, knowing the IQ score difference between the NNS children and the REN children who are in the first grade, it is difficult to believe that there are not significant differences between the two groups on reading and arithmetic ability in the 1st grade (Table XIII). Further, the ratings were done by a number of teachers in different schools that serve different populations of children.

We ran correlation coefficients between teachers' ratings and achievement tests scores; the intercorrelations between teachers' ratings on the objective of the NNS (Table XII) and six relevant variables (Table XIII) was .65 (N=90). The correlation between teachers' ratings of arithmetic ability and the number readiness scores on the Metropolitan was .10 for 35 NNS, comparable group and REN children in kindergarten. The correlation between teachers' ratings of reading ability and the reading readiness scores on the Metropolitan was .22 for 34 kindergarten children. For the first and second grade children, we correlated teacher ratings of reading and arithmetic ability with California Achievement Test scores on vocabulary and reading comprehension total, and the arithmetic reading and fundamentals total. The coefficients were -.04 and +.74.

In other words, the teachers' ratings on different variables are related (.65) but except for arithmetic in the first and second grade (.74), there is no correlation between the test scores (.10, .22, -.04) and the teacher ratings.

We would hypothesize that the teachers are still seeing children as stereotypes--i.e., Mexican-American children do not do well in school. If this is true we have a major problem to overcome because if the teacher predicts a child will not do well in school, that child is not likely to do well.

SECTION III THE TYPING BOOTH

We were concerned with the following questions:

1. Is there any relationship between the number of times a child wants to type, the total time he spends in the booth, and his achievement there?

   Inspection of Table XVIII indicates the number of times in the booth is highly correlated with the amount of time spent there and with the total number of strokes, The number of times in the booth is more highly correlated with the phase number reached in 1967-68 than it was the previous year.

   Total time in the booth is highly correlated with number of strokes and the phase reached by the child for the two-year period; there is very little difference between the correlation coefficients for the two years.

   The total stroke count is moderately correlated with the phase reached by the child for the two one-year periods; a coefficient of .48 was obtained for the 1967 data and .42 for the 1966 data.

2. Is there any relation between age, and the typing booth achievement?

   The answer for the first three years was a tentative yes. The findings in 1967-68 confirm this. No three-year-old child at the New Nursery School (NNS) or the REN school has been a high achiever in the booths, that is, no three-year-old child has reached the point of typing words and stories (see Table XIX). The percentage of higher achievers for four-year-old children who are attending the school for the second year (4-2) has varied from 21% in 1965-66 to 43% in 1966-67 to 30% in 1967-68. The percentage of higher achievers for the four-year-old children who are attending the school for the first year (4-1) has been 20% in 1964-65, 30% in 1965-66 and

TABLE XVIII

Correlation on Booth Data for NNS (1967-68)

N = 28

	# of times in booth	Total time in booth	Stroke count	Phase #
#of times in booth		.86	.62	.48
Total time in booth			.70	.68
Stroke count				.48
Phase #				

Correlations on Booth Data for NNS (1966-67)

N=47

	Phase number	Stroke Count	Number times in Booth
Total Booth Time	.65	.56	.76
Phase number		.42	.30
Stroke Count			.41

TABLE XIX

Booth Achievement of NNS Children

Over a 4-Year Period

	Year	Level of Achievement of NNS Children									
		1		2		3		4		5	
		N	%	N	%	N	%	N	%	N	%
3-1	1964-65	3	.27	6	.55	2	.18	0		0	
	1965-66	4	.50	4	.50	0		0		0	
	1966-67	1	.04	14	.56	10	.40	0		0	
	1967-68	4	.36	4	.36	3	.28	0		0	
3-2	1967-68	0		1	.50	1	.50	0		0	
4-1	1964-65	4	.27	5	.33	3	.20	2	.13	1	.07
	1965-66	2	.20	5	.50	0		1	.10	2	.20
	1966-67	0		7	.47	5	.33	3	.20	0	
	1967-68	0		2	1.00	0		0		0	
4-2	1965-66	1	.07	9	.64	1	.07	1	.07	2	.14
	1966-67	0		2	.29	2	.29	1	.14	2	.29
	1967-68	0		3	.23	6	.47	4	.30	0	

20% in 1966-67. So it does not seem likely that the experience as a three-year-old in the typing booth contributes substantially to achievement in the booths when the child is four.

3. Is there any relationship between the IQ test score and achievement in the typing booth?

The relationship that appears to exist over the first three years was that any four-year-old who had an initial IQ score below 90 was not likely to be a higher achiever in the booths (only one child out of 21 had done so) but for those children who had an initial IQ of 90 or above achievement in the booths was not related to IQ scores. (The reader is referred to Table V in the original report "Use of Typewriters and Related Equipment," etc. for 1966-67.) We used the PPVT this year, and so the data is not <u>directly</u> comparable; however, reference to Tables XX and XXI here confirms that approximately the same relationships exist for 1967 as for previous years.

4. Is there any relationship between the achievement in the booths and language development or concept formation?

The reader should note the limitations mentioned on page 56 of last year's report before drawing any conclusions on the data that follows:

As reported last year, we found that NNS high booth achievers in 1965-66 scored significantly better than low booth achievers on a Metropolitan Reading Readiness Test given a year later in kindergarten, and that the high booth achievers in 1966-67 scored better than the low achievers in the "C" Test given at the end of that school year.

We have data now on the Metropolitan Reading Readiness Test given in kindergarten; results are reported in Table XXII. While the

TABLE XX

Distribution of NNS, PPVT Scores
for High and Low Booth Achievers, *

1967-68

3-year-olds *							
	<70	70-79	80-89	90-99	100-109	110-119	>120
High Achievers							
Low Achievers	3	2	3	1	3		
4-year-olds **							
	<70	70-79	80-89	90-99	100-109	110-119	>120
High Achievers			1	1	4		
Low Achievers	2	1	1	2	3	1	

* The sample is considerably reduced, since some of the children could not be tested at the beginning of the year.

*Booth data is available for 13-3 year olds; however no IQ measure is available for one S.

**IQ measures for 2-4 year olds are unavailable

TABLE XXI

Distribution of REN PPVT Scores for High and Low Booth Achievers, *

1967-68

3-year-olds							
	< 70	70-79	80-89	90-99	100-109	110-119	≥120
High Achievers							
Low Achievers				2	1	1	2
4-year-olds							
	< 70	70-79	80-89	90-99	100-109	110-119	≥120
High Achievers				1	1	6	4
Low Achievers				1	2	2	2

*This sample is considerably reduced, since some REN children entered late and were not given the pre- PPVT.

TABLE XXII

Comparison of test scores on Metropolitan Reading Readiness Test for children with High and Low achievement in Typing Booths

Booth Achievement	45	READING READINESS 46-50	51-55	56-60	61-65	TOTAL
High	1	0	0	3	0	4
Low	1	1	0	3	2	7
Total	2	1	0	6	2	11

Booth Achievement	10	NUMBER READINESS 11-13	14-17	18-21	22	TOTAL
High	0	0	1	2	1	4
Low	1	0	3	2	1	7
Total	1	0	4	4	2	11

Booth Achievement	0-1	REPRODUCTION OF FIGURES 2-3	4-5	6-7	8-9	TOTAL
High	0	1	1	1	1	4
Low	3	2	1	1	0	7
Total	3	3	2	2	1	11

Booth Achievement	<60	TOTAL READINESS 60-69	70-79	80-90	90+	TOTAL
High	0	1	1	2	0	4
Low	1	1	2	2	1	7
Total	1	2	3	4	1	11

cell frequencies are too small to permit a meaningful statistical comparison, some trends can be noted. In general we can say that children who reached the stage of typing words and stories while in the New Nursery School tend to do well on the Metropolitan as kindergarteners. In only one instance (Reading Readiness) did a high booth achieving child score low on the achievement test.

The only measure of the realtionship of booth achievement to language development that we have for the children in the NNS school during 1967-68 is Factor B of the Pre-school Inventory. While it is obvious from Table XXIII that a clearcut relationship does not exist, we are aware of the limitations of our instruments. It is obvious from observations in the classroom and in the typing booth that the language of these children does change; further, as we noted earlier, the standardization sample and norms for the test we used are inadequate.

5. How does the performance of the NNS children compare to the REN children?

The 1967-68 school year is the first year when the typing booths operated for the full year at REN school. Comparisons are still difficult because at the REN school most of the children come either two or three days a week, so the NNS children have 40% to 60% more opportunities to go to the booths than the REN schidren have. The achievement of the REN and NNS children for 1967-68 is shown in Table XXIV. Forty-four percent of the REN children were high achievers while only 14% of the NNS children were. The difference between the two groups is significant at .01 level in favor of the REN children.

TABLE XXIII

Distribution of Pre School Inventory - Associative Vocabulary - Scores for High and Low Booth Achievers, 4-year-olds.

NNS, 1967-68

	0-5	6-10	11-15	16-20	21-25	
Low Achievers	3	2	4	1		
High Achievers		4				

Distribution of Pre-School Inventory - Associative Vocabulary - Scores for High and Low Booth Achievers, 4-year-olds.

REN, 1967-68

	0-5	6-10	11-15	16-20	21-25	
Low Achievers			1	7	3	
High Achievers			4	8	3	

TABLE XXIV

Booth Achievement for NNS and REN Children, 1967-68

	HI	LOW	TOTAL
NNS (N=28)	4	24	28
REN (N=36)	16	20	36
	20	44	64